



# Disintegrating Rockets

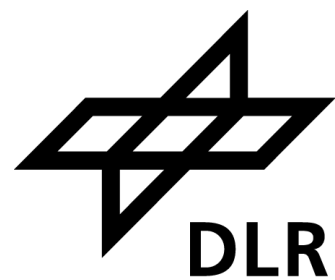
Softwarefehler in der Raumfahrt

Carina Haupt  
@caha42

```

178         default="v",
179     )
180     global_scale_setting = FloatProperty(
181         name="Scale",
182         min=0.01, max=1000.0,
183         default=1.0,
184     )
185
186     def execute(self, context):
187
188         # get the folder
189         folder_path = (os.path.dirname(self.filepath))
190
191         # get objects selected in the viewport
192         viewport_selection = bpy.context.selected_objects
193
194         # get export objects
195         obj_export_list = viewport_selection
196         if self.use_selection_setting == False:
197             obj_export_list = [i for i in bpy.context.scene.objects]
198
199         # deselect all objects
200         bpy.ops.object.select_all(action='DESELECT')
201
202         for item in obj_export_list:
203             item.select = True
204             if item.type == 'MESH':
205                 file_path = os.path.join(folder_path, "{}.obj".format(item.name))
206                 bpy.ops.export_scene.obj(filepath=file_path, use_selection=True,
207                                         axis_forward=self.axis_forward_setting,
208                                         axis_up=self.axis_up_setting,
209                                         use_animation=self.use_animation_setting,
210                                         use_mesh_modifiers=self.use_mesh_modifiers_setting,
211                                         use_edges=self.use_edges_setting,
212                                         use_smooth_groups=self.use_smooth_groups_setting,
213                                         use_smooth_groups_bitflags=self.use_smooth_groups_bitflags_setting,
214                                         use_normals=self.use_normals_setting,
215                                         use_unifs=self.use_unifs_setting,
216                                         use_materials=self.use_materials_setting,

```



**DLR**

**Deutsches Zentrum  
für Luft- und Raumfahrt**  
German Aerospace Center

SCIENCE?  
ONE MOMENT.



## Die FrOSCon Tools

- Ticket(vor)verkauf
- Kassensystem
- Call for Papers
- Ausstellungsverwaltung
- Sponsorenverwaltung
- Kontaktverwaltung
- Helferverwaltung
- Kommunikation
- Homepage
- Video Recording

CCC Kassensystem\* /  
Badgesystem\*  
Frab

SaBoT

Engelsystem  
RT\*  
Typo3\*  
C3TT\*



\*Nicht Open Source



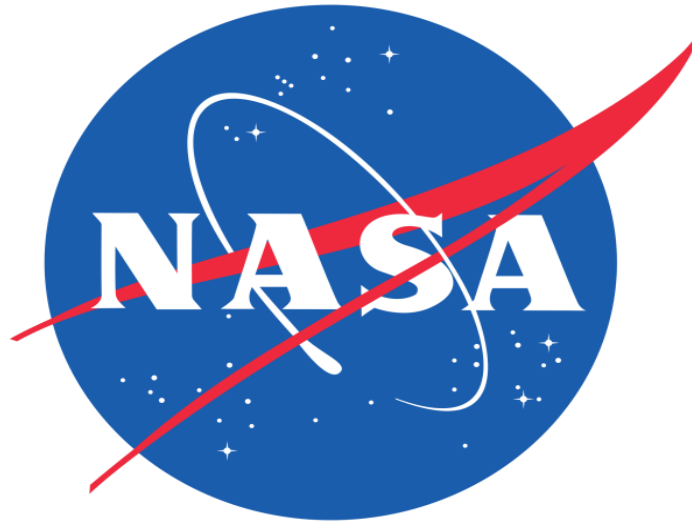
**FrOSCon**  
Free and Open Source Software Conference

**DLR?**

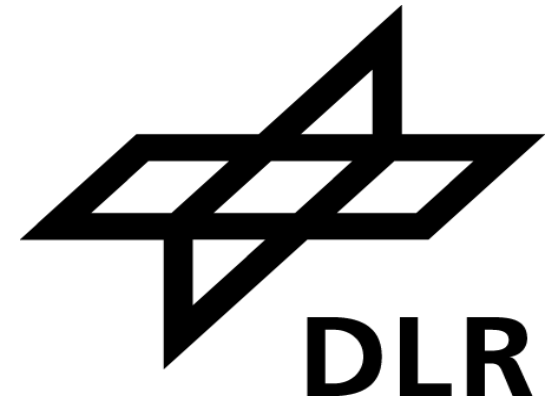
Deutsches Zentrum für Luft- und Raumfahrt



+



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“German NASA”\*







Ca. 8.200 Mitarbeiter

47 Institute und Einrichtungen

27 Standorte



Wissen für Morgen

# Das DLR in 2 Minuten



Wissen für Morgen





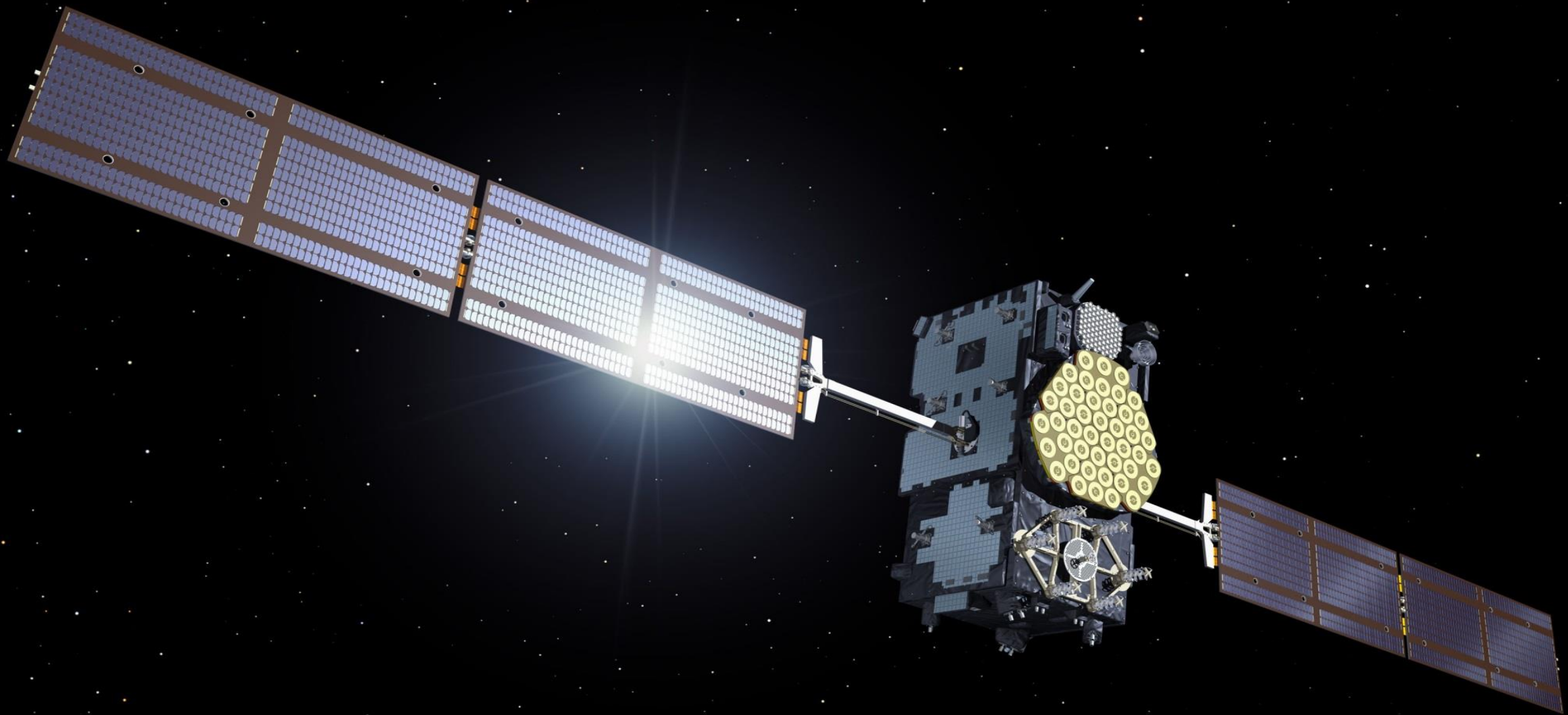




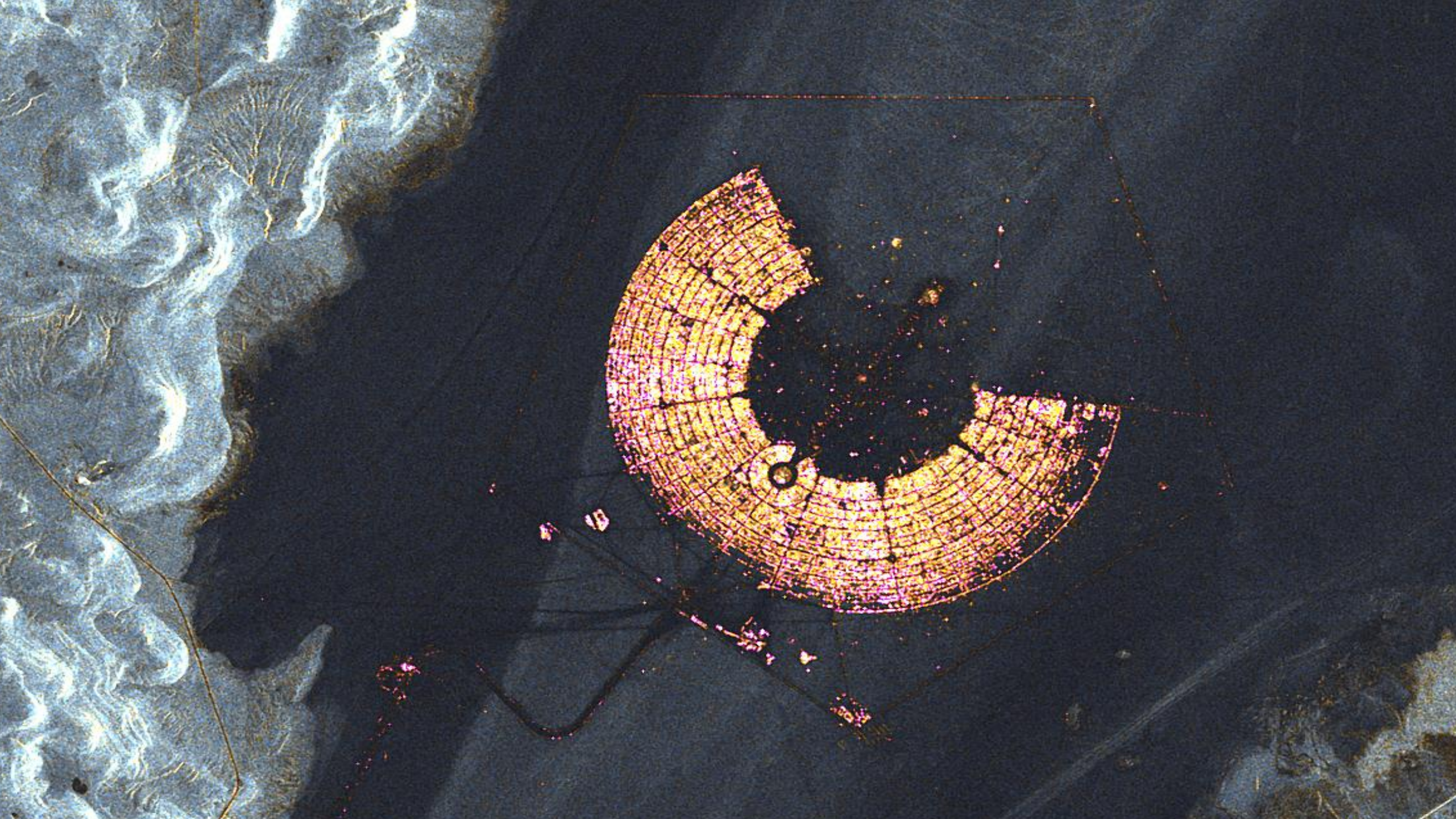


























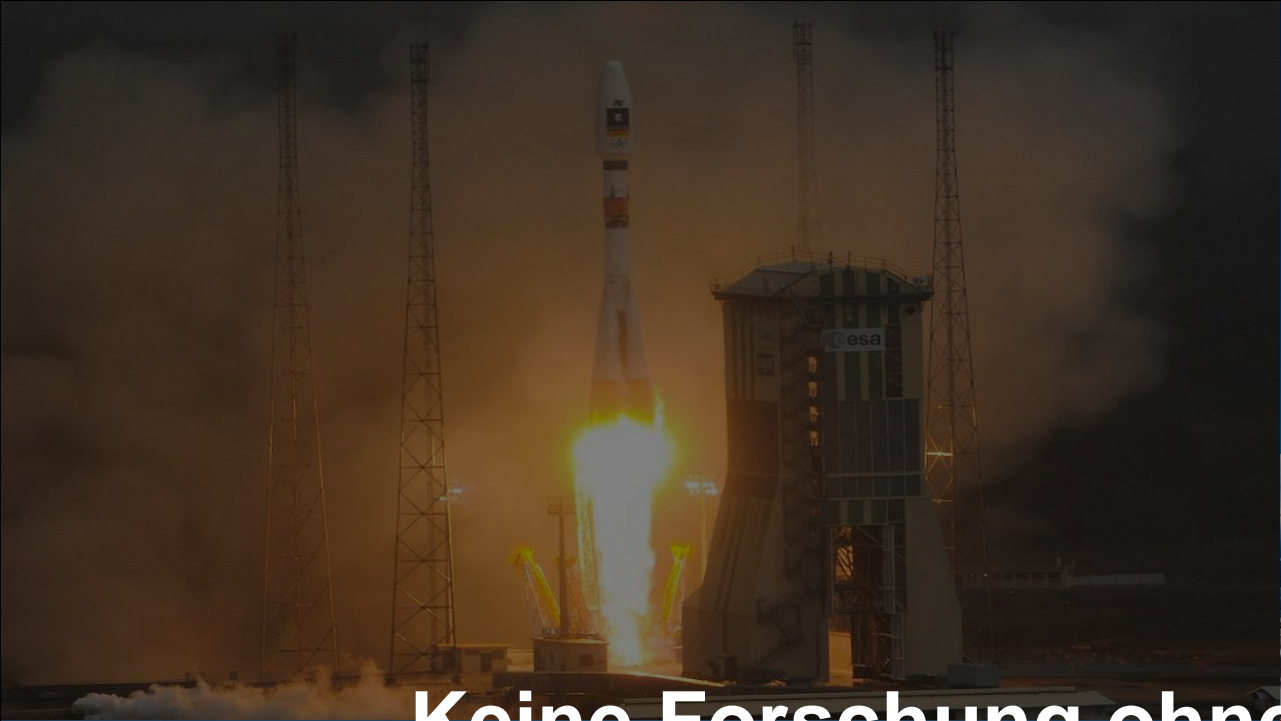


**Und wo ist jetzt die Software?**



Wissen für Morgen





**Keine Forschung ohne Softwareentwicklung**







**Forscher != Software Entwickler**





**Ist Softwareentwicklung denn so schwierig?**



Wissen für Morgen





# Die Historie der Softwareentwicklung



“... as long as there were no machines,  
**programming was no problem at all;**  
when we had a few weak computers,  
**programming became a mild problem,**  
and  
now we have gigantic computers,  
**programming has become an equally gigantic problem.”**

Edsger W. Dijkstras zur Ursache der „Software-Krise“, 1972

Edsger W. Dijkstra, 2002

By Hamilton Richards - CC-BY-SA-3.0

[https://commons.wikimedia.org/wiki/File:Edsger\\_Wybe\\_Dijkstra.jpg](https://commons.wikimedia.org/wiki/File:Edsger_Wybe_Dijkstra.jpg)



# Die „Software-Krise“ (1960er)

## Die Entstehung von Software Engineering

„Zielorientierte Bereitstellung und systematische Verwendung von **Prinzipien, Methoden** und **Werkzeugen** für die arbeitsteilige, **ingenieurmäßige Entwicklung** und Anwendung von umfangreichen Softwaresystemen.“

Helmut Balzert, Lehrbuch der Software-Technik, S. 36





A dark, atmospheric photograph of a rocket launch. A thick, dark plume of smoke and vapor rises from the launch site at the bottom center. To the right of the plume, a bright starburst of light is visible in the dark sky, with several faint, thin lines radiating from it. The overall scene is dimly lit, with the primary light sources being the rocket's exhaust and the starburst.

# **Softwareentwicklung und Raumfahrt ODER Disintegrating Rockets**

# Mariner 1 (1962)

## Flyby an Venus







# Phobos 1 (1988)

## Mars, Phobos und Deimos erforschen

Phobos Marte.jpg by NASA – Public Domain  
[https://en.wikipedia.org/wiki/File:Phobos\\_Marte.jpg](https://en.wikipedia.org/wiki/File:Phobos_Marte.jpg)

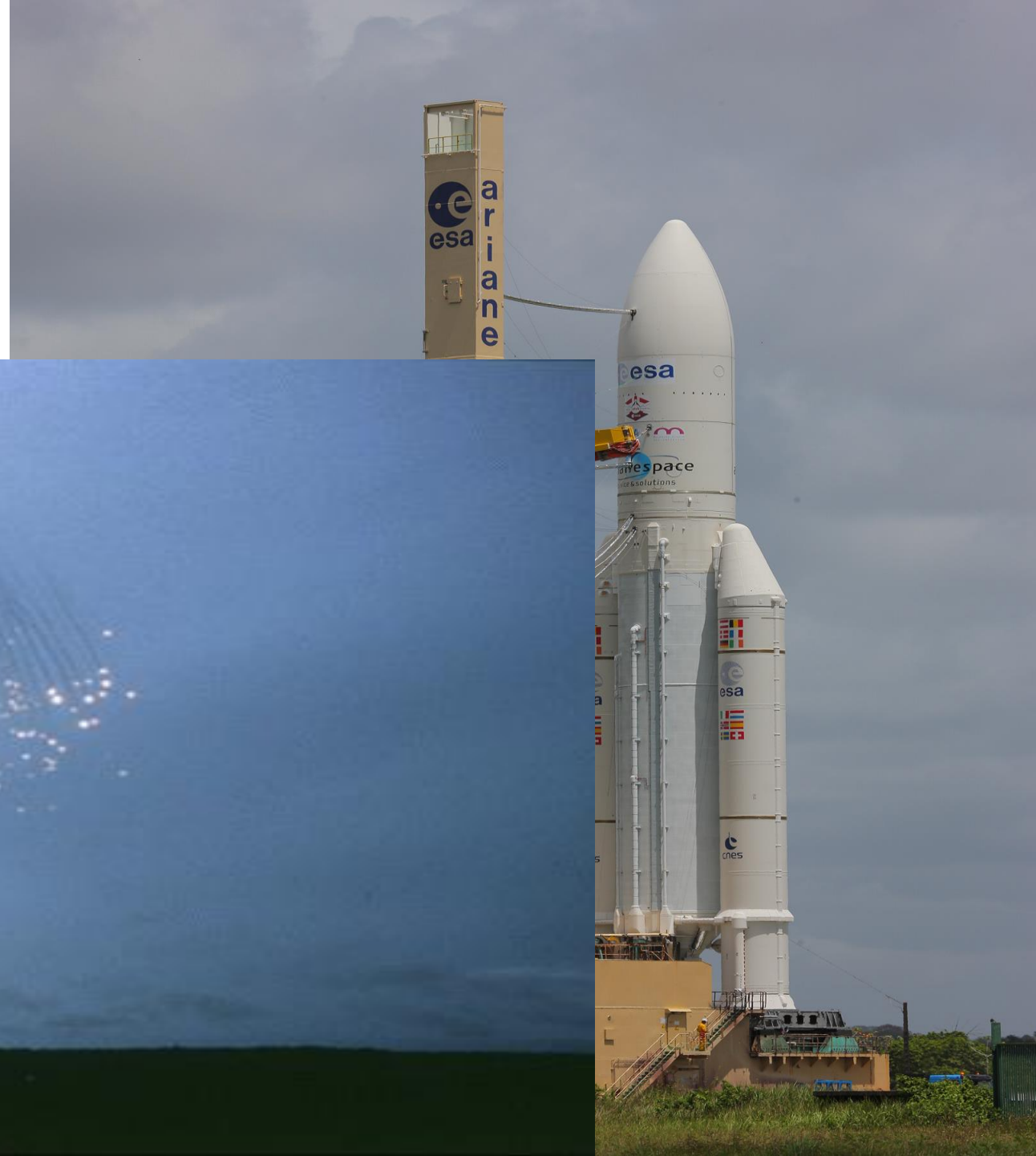


# Ariane 5 Flight 501 (1996)

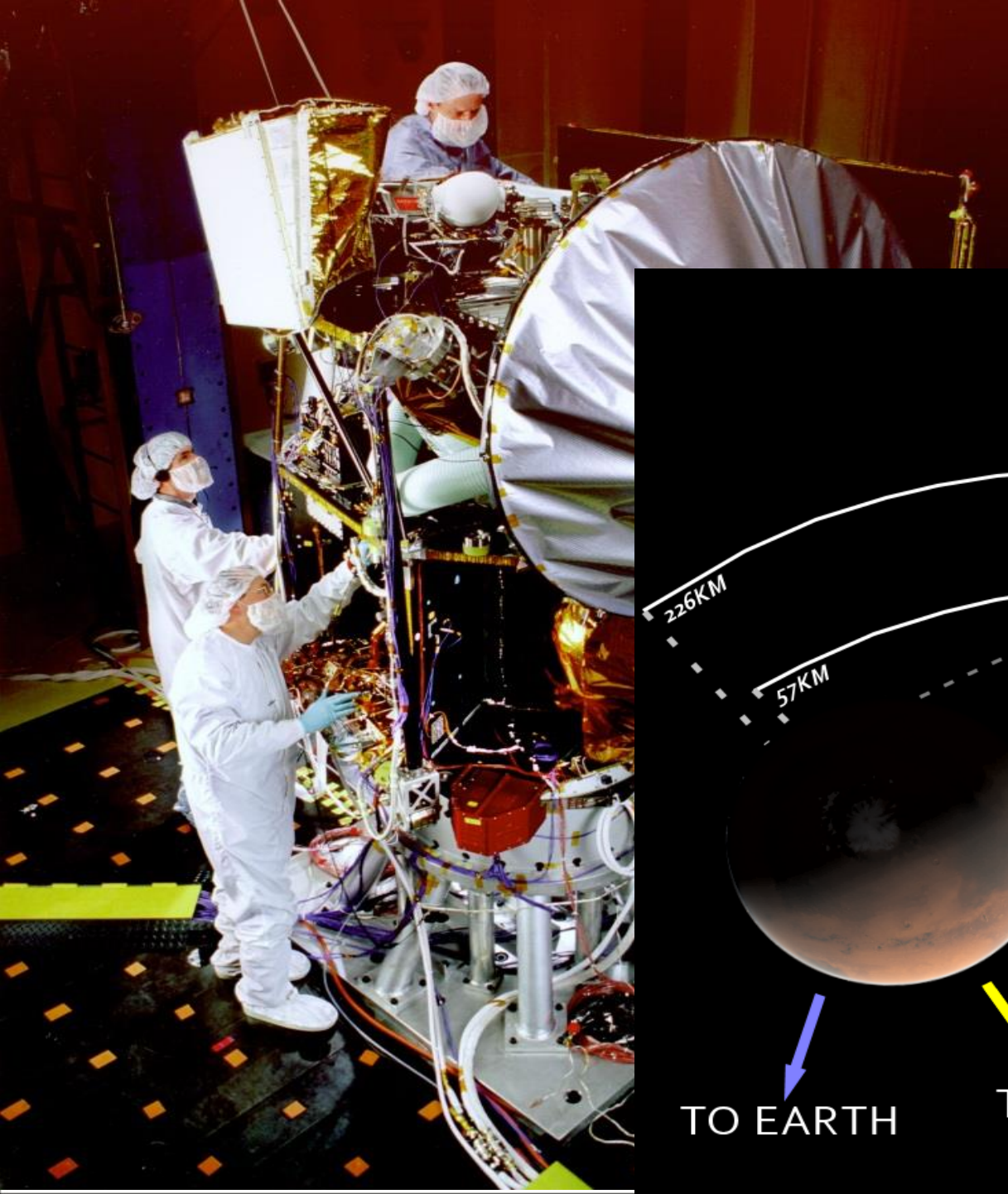
Transport von Satelliten in die  
Magnetosphäre der Erde

By esa

- CC-BY -  
\_ way \_ to \_

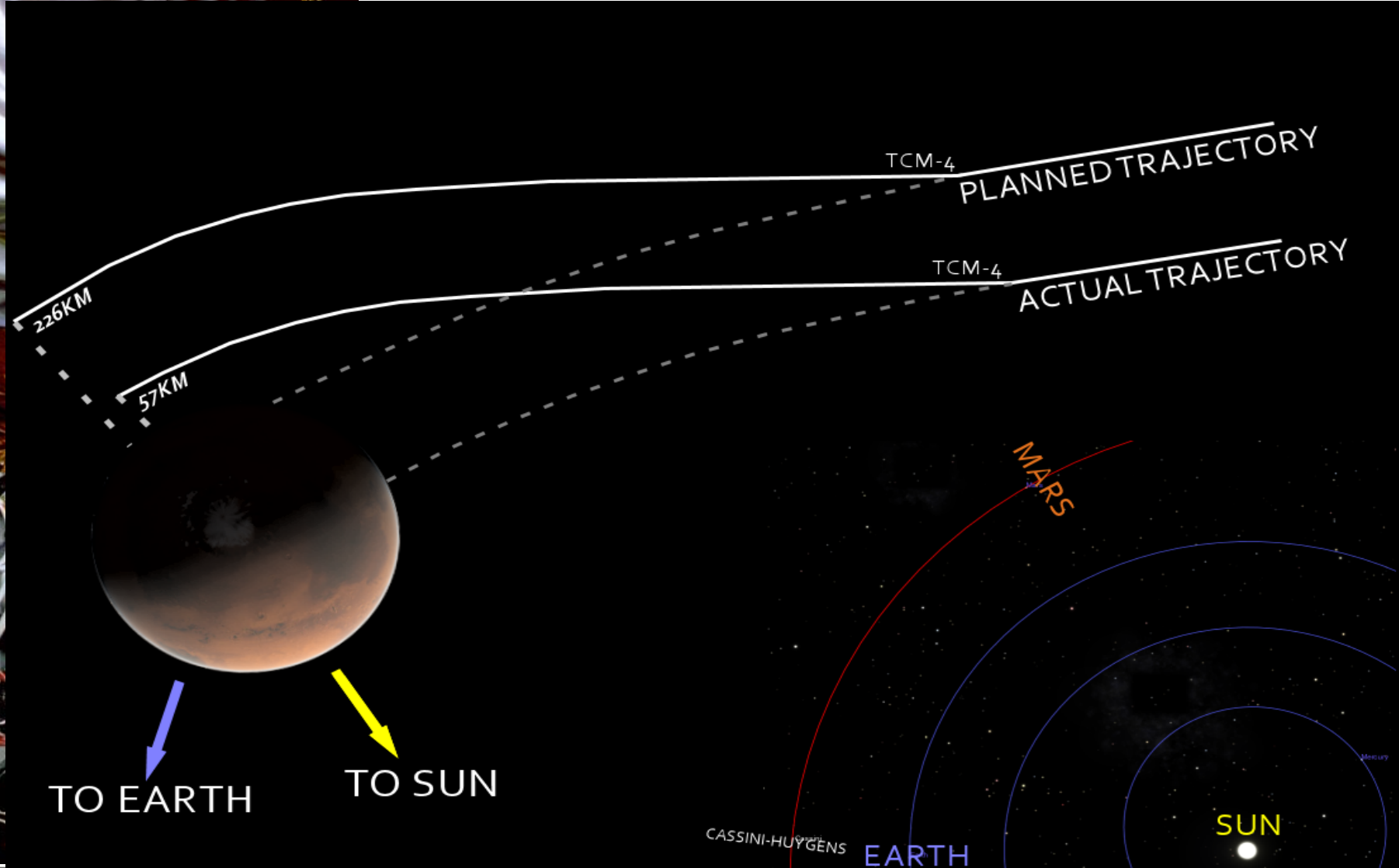






# Mars Climate Orbiter (1998)

Mars erforschen & Kommunikationsrelay



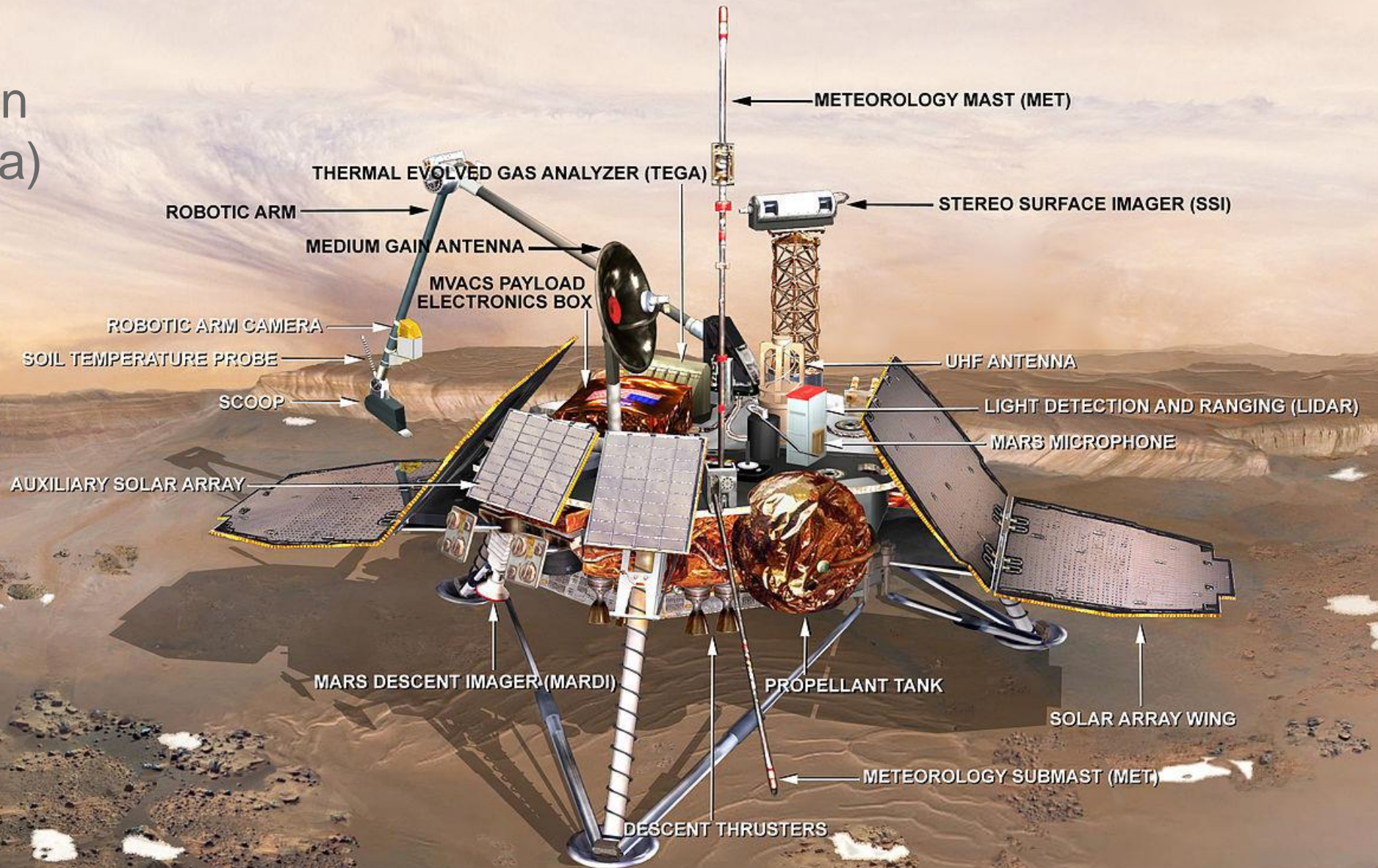


# MARS POLAR LANDER: AN EXPEDITION TO THE SOUTH POLAR REGION

## Mars Polar Lander (1999)

Mars erforschen  
(Erde und Klima)

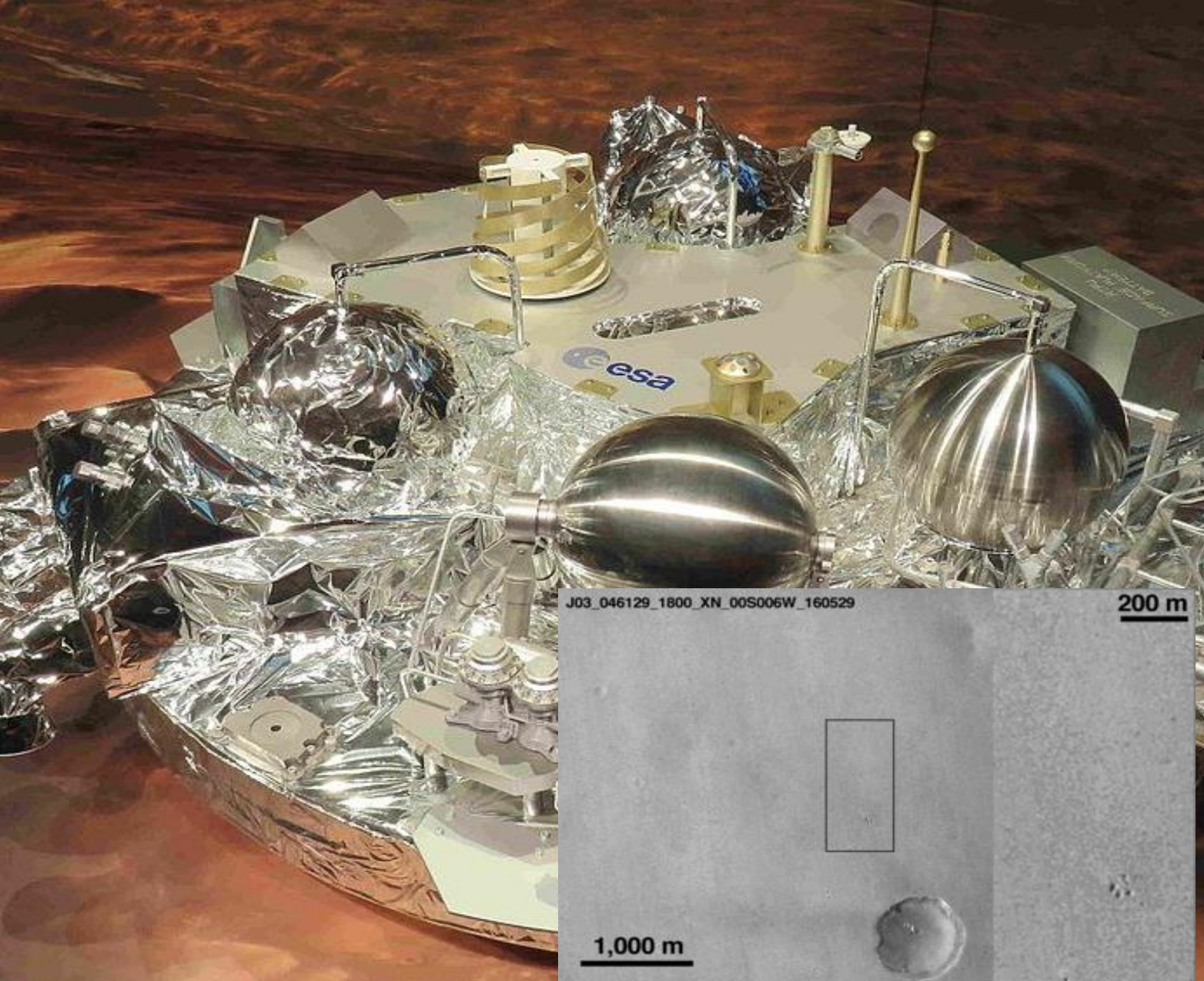
Mars-polar-lander-back.jpg by NASA – Public Domain  
<https://commons.wikimedia.org/wiki/File:Mars-polar-lander-back.jpg>



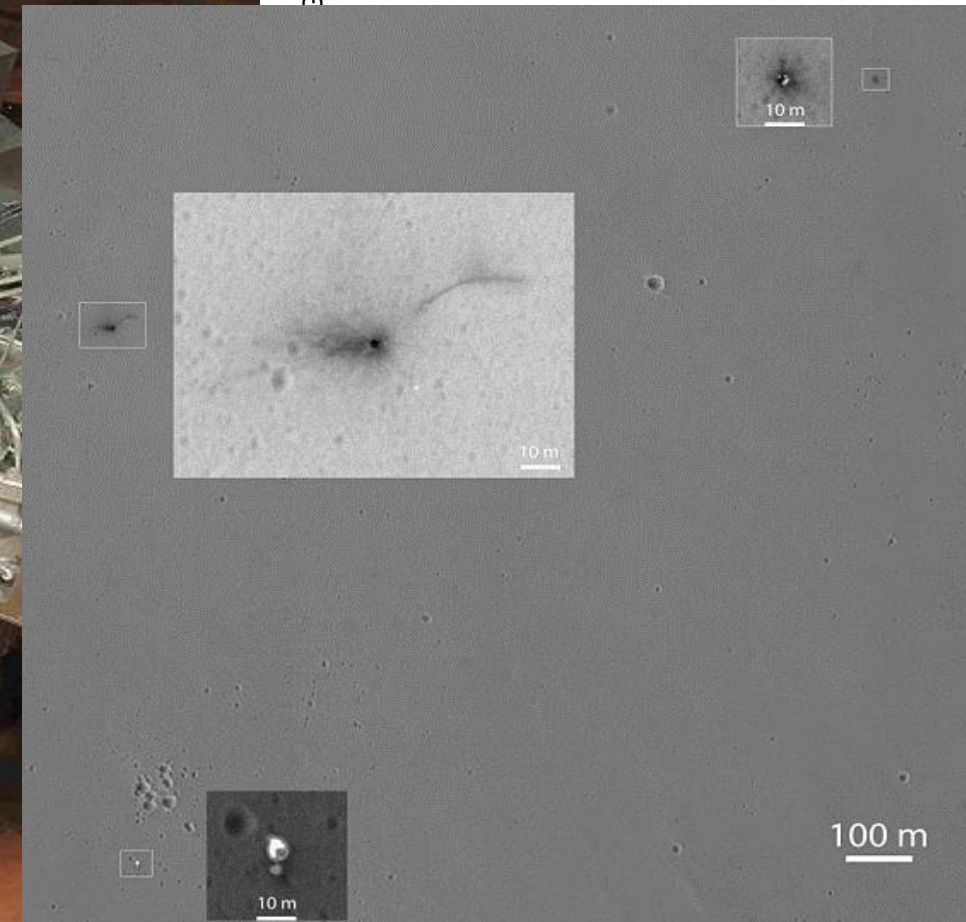


# Schiaparelli (2016)

## Landung auf Mars



PIA21130 Signs of Schiaparelli Test Lander Seen From Orbit.gif by NASA – Public Domain  
[https://en.wikipedia.org/wiki/File:PIA21130\\_Signs\\_of\\_Schiaparelli\\_Test\\_Lander\\_Seen\\_From\\_Orbit.gif](https://en.wikipedia.org/wiki/File:PIA21130_Signs_of_Schiaparelli_Test_Lander_Seen_From_Orbit.gif)

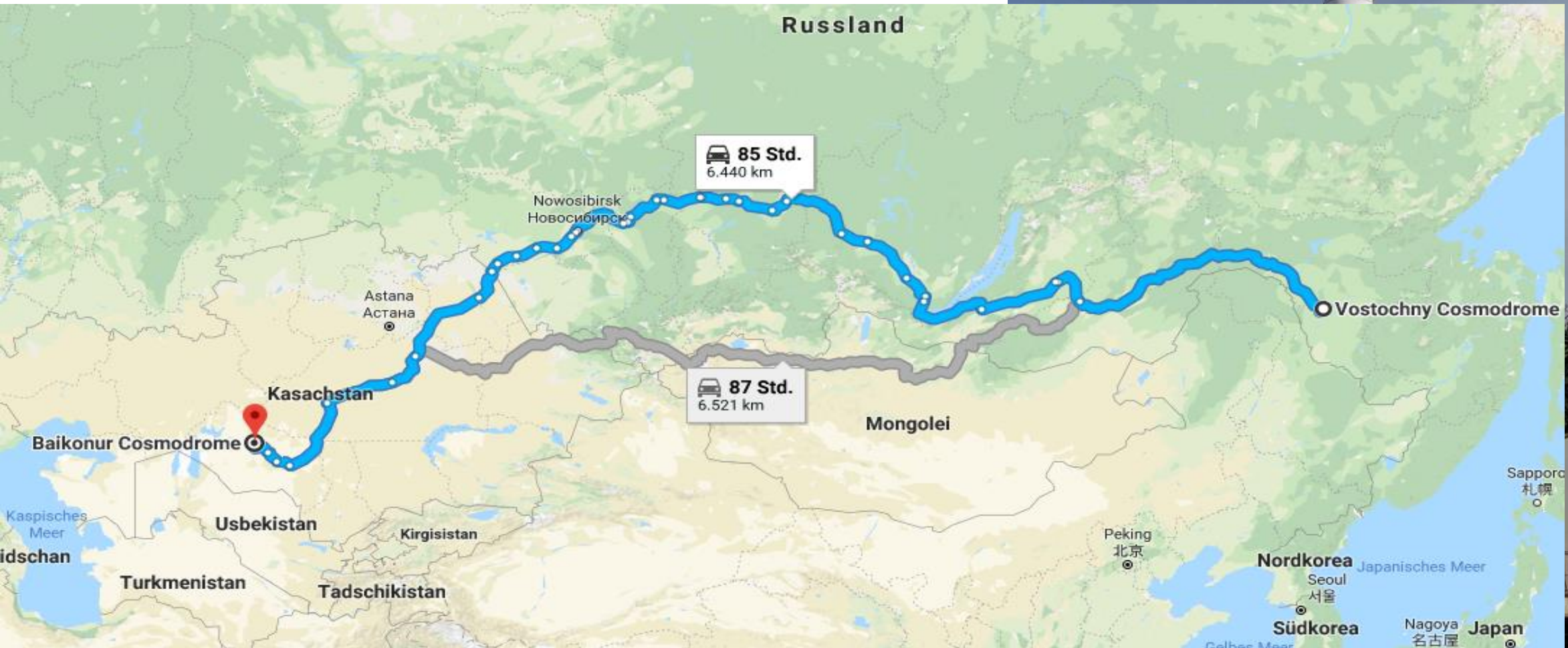


PIA21131 Closer Look at Schiaparelli Impact Site on Mars.jpg by NASA – Public Domain  
[https://en.wikipedia.org/wiki/File:PIA21131\\_Closer\\_Look\\_at\\_Schiaparelli\\_Impact\\_Site\\_on\\_Mars.jpg](https://en.wikipedia.org/wiki/File:PIA21131_Closer_Look_at_Schiaparelli_Impact_Site_on_Mars.jpg)



# Sojus 2.1b (2017)

## Satellitentransport





**Warum läuft denn immer noch so viel schief?**

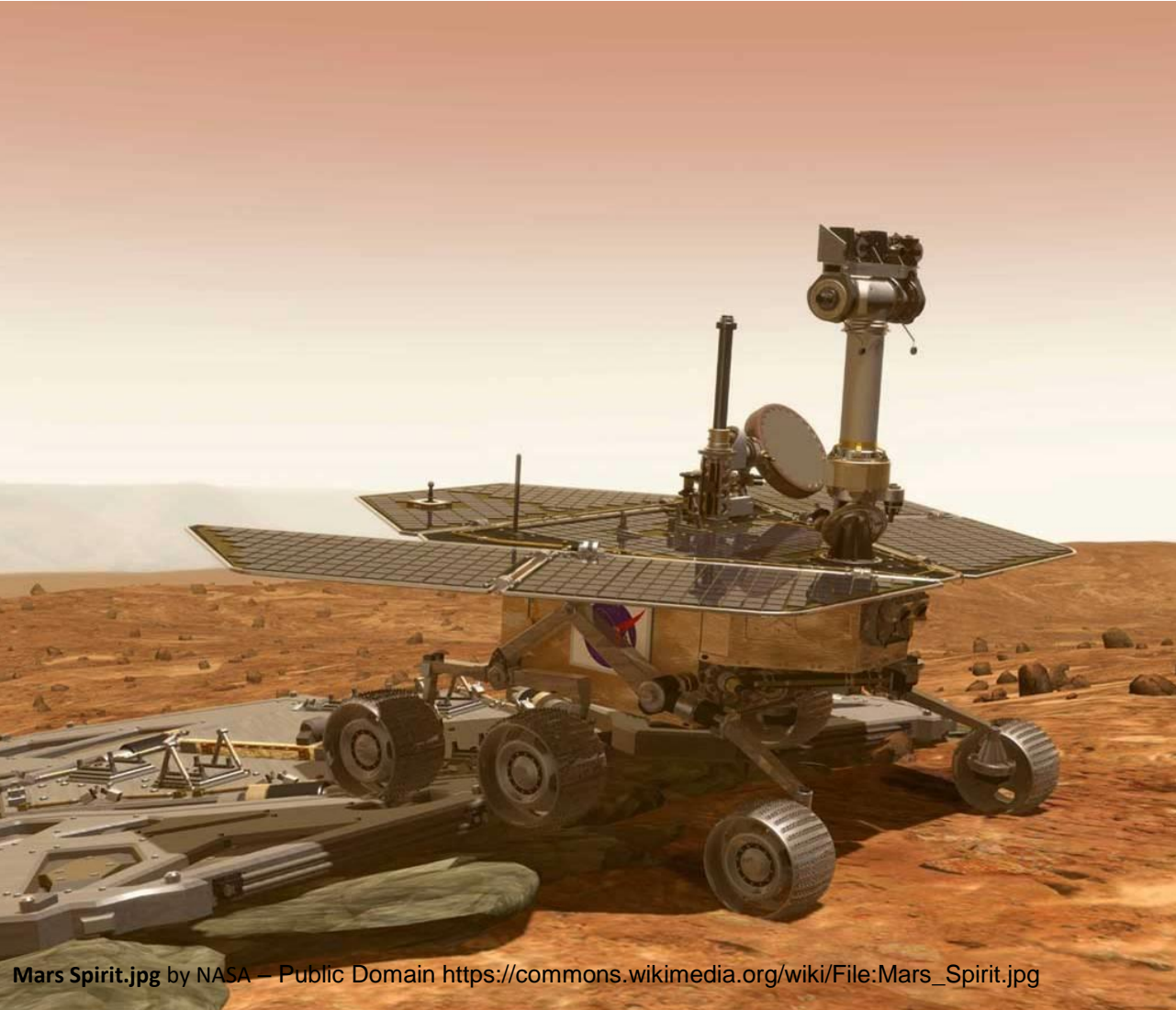


Wissen für Morgen

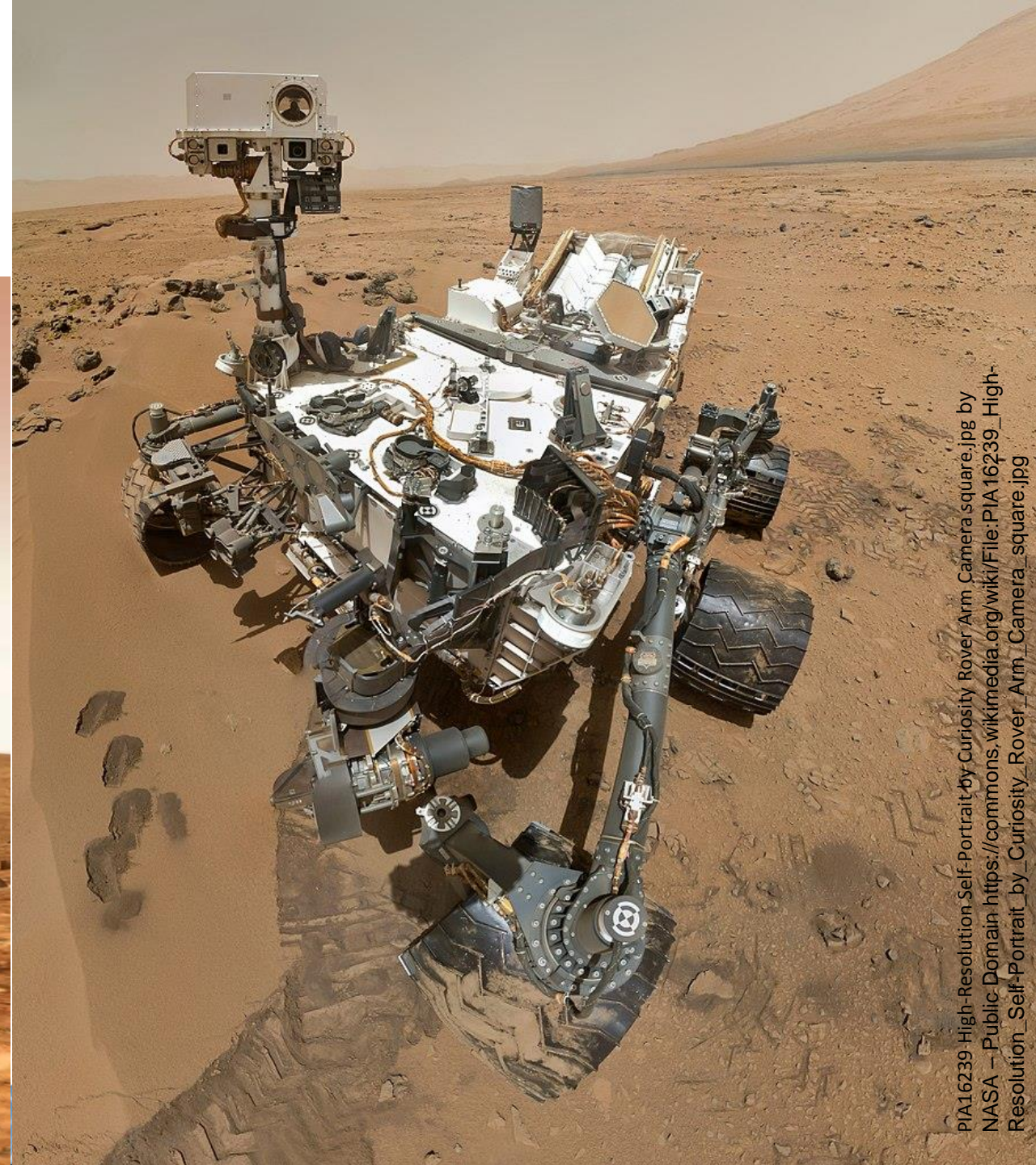




# Spirit, Opportunity und Curiosity Erfolgsgeschichten



Mars Spirit.jpg by NASA – Public Domain [https://commons.wikimedia.org/wiki/File:Mars\\_Spirit.jpg](https://commons.wikimedia.org/wiki/File:Mars_Spirit.jpg)



PIA16239 High-Resolution Self-Portrait by Curiosity Rover Arm Camera square.jpg by NASA – Public Domain [https://commons.wikimedia.org/wiki/File:PIA16239\\_High-Resolution\\_Self-Portrait\\_by\\_Curiosity\\_Rover\\_Arm\\_Camera\\_square.jpg](https://commons.wikimedia.org/wiki/File:PIA16239_High-Resolution_Self-Portrait_by_Curiosity_Rover_Arm_Camera_square.jpg)



HELL  
YEAH  
IT'S ROCKED  
SCIENCE!



KOSMOS

Fragen?

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